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**1 Router plugins: a software architecture for next-generation routers**

Dan Decasper, Zubin Dittia, Guru Parulkar, Bernhard Plattner

February 2000

**IEEE/ACM Transactions on Networking (TON)**, Volume 8 Issue 1

Full text available: pdf(530.34 KB)

Additional information: [full citation](#), [references](#), [citations](#), [index terms](#)**Keywords:** communication system routing, communication system security, internet, modular computer systems**2 Router plugins: a software architecture for next generation routers**

Dan Decasper, Zubin Dittia, Guru Parulkar, Bernhard Plattner

October 1998

**ACM SIGCOMM Computer Communication Review, Proceedings of the ACM SIGCOMM '98 conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 28 Issue 4

Full text available: pdf(1.82 MB)

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Present day routers typically employ monolithic operating systems which are not easily upgradable and extensible. With the rapid rate of protocol development it is becoming increasingly important to dynamically upgrade router software in an incremental fashion. We have designed and implemented a high performance, modular, extended integrated services router software architecture in the NetBSD operating system kernel. This architecture allows code modules, called *plugins*, to be dynamically ...

**Keywords:** high performance integrated services routing, modular router architecture, router plugins**3 Packet classification on multiple fields**

Pankaj Gupta, Nick McKeown

August 1999

**ACM SIGCOMM Computer Communication Review, Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 29 Issue 4

Full text available: pdf(1.46 MB)

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Routers classify packets to determine which flow they belong to, and to decide what service they should receive. Classification may, in general, be based on an arbitrary number of fields in the packet header. Performing classification quickly on an arbitrary number of fields is known to be difficult, and has poor worst-case performance. In this paper, we consider a number of classifiers taken from real networks. We find that the classifiers contain considerable structure and redundancy that can ...

**4 The click modular router**

Eddie Kohler, Robert Morris, Benjie Chen, John Jannotti, M. Frans Kaashoek

August 2000

**ACM Transactions on Computer Systems (TOCS)**, Volume 18 Issue 3

Full text available: pdf(379.31 KB)

Additional information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Clicks is a new software architecture for building flexible and configurable routers. A Click router is assembled from packet processing modules called elements. Individual elements implement simple router functions like packet classification, queuing, scheduling, and interfacing with network devices. A router configurable is a directed graph with elements at the vertices; packets flow along the edges of the graph. Several features make individual elements more powerful and ...

**Keywords:** component systems, routers, software router performance

<sup>6</sup> IP switching—ATM under IP

Peter Newman, Greg Minshall, Thomas L. Lyon

April 1998

**IEEE/ACM Transactions on Networking (TON)**, Volume 6 Issue 2

Full text available:  pdf (154.32 KB)

Additional information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** Internet protocol, asynchronous transfer mode, broadband communication, communication system control, data communication, packet switching, protocols

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